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TI - Solid high-polymer type fuel cell having improved strength - comprising ion-exchange membrane and gas diffusion electrode having catalyst layer
IW - SOLID HIGH POLYMER TYPE FUEL CELL IMPROVE STRENGTH COMPRISE ION EXCHANGE MEMBRANE GAS DIFFUSION ELECTRODE CATALYST LAYER
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PN - JP6342666 A 941213 DW9509 H01M8/02 008pp
ORD - 1994-12-13
IC - C08J5/22 ; H01M8/02 ; H01M8/10
FS - CPI;EPI
DC - A85 L03 X16
AB - J06342666 The solid high-polymer type fuel cell comprises ion-exchange membrane for electrolyte, and gas diffusion electrode having catalyst layer. The ion-exchange membrane consists of composite of component having functional gp. and core material consisting of high-polymer contg. fluorine. The component having functional gp. comprises cpd. contg. fluorine, having exchange capacity of 0.9-2 mili equivalent/g. Thickness of cpd. shall be 10-100 microns before forming the combined material. Porosity of the core material before making composite shall be 70-95%.
- ADVANTAGE - The solid high-polymer type fuel cell with the electrolyte thin film having improved strength can be obtd. Output power of the cell can be increased.
- In an example, carbon black, polyoxyethylene (10) octylphenylether, polytetrafluoroethylene dispersed aq. soln., and silica gel were mixed and dried in a sequence to prepare material powder of electrode. The obtd. powder mixed with solvent naphtha was formed into film. The film was sintered, then 12 wt.% chloroplatinic acid-ethanol soln. was impregnated in the film, then reduced to prepare the catalyst layer. Perfluorocarbon sulphonic acid soln. was impregnated in the layer to prepare the electrode. Film consisting of copolymer of $\text{CF}_2=\text{CF}_2$ and $\text{CF}_2=\text{CFOCF}_2\text{CF}(\text{CF}_3)\text{O}(\text{CF}_2)_3\text{SO}_2\text{F}$ was laminated with film of polytetrafluoroethylene, and unified at 250 deg.C at 100 kg/cm². The laminated film was soaked in mixed soln. of 55 wt.% of water, 30 wt.% of dimethylsulphoxide, and 15 wt.% of calcium hydr xide, at 90 deg.C, then in HCl aq. soln. to obtain composite film composed of the c mponent having sulphonic acid gp. and the c re material. The btd. film was placed between two of the electrodes, and jointed together at 140 deg.C at 80 kg/cm² to prepare the fuel cell.
- (Dwg.4/5)